



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/749,585	12/28/2000	Ross Suydam Heitkamp	0023-0003	4840
44987	7590	02/09/2005	EXAMINER	
HARRITY & SNYDER, LLP 11240 WAPLES MILL ROAD SUITE 300 FAIRFAX, VA 22030			HUYNH, KIM T	
			ART UNIT	PAPER NUMBER
			2112	

DATE MAILED: 02/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/749,585	HEITKAMP, ROSS SUYDAM
	Examiner	Art Unit
	Kim T. Huynh	2112

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 19 November 2004.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-28 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-28 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 28 December 2000 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date _____.
 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date _____.
 5) Notice of Informal Patent Application (PTO-152)
 6) Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 9-16, 28 are rejected under 35 U.S.C. 102(e) as being anticipated by Cranston et al. (US Patent 6,253,269)

As per claim 9, Cranston discloses a method for selecting a bus in a multi-bus system, comprising:

- Generating control signals relating to bus selection in the multi-bus system; (col.3, line 52-col.4, line 6)
- Determine whether a conflict for bus selection exists based on the control signals; (col.3, line 52-col.4, line 22)
- Generating one or more alternate control signals when a conflict is determined to exist; and (col.7, lines 17-37), (col.4, lines 1-22)
- Selecting a bus using the one or more alternate control signals. (col.7, lines 17-56), wherein a priority can be assigned to communication buses implies alternate control signals when a conflict is determined to exist. (col.4, lines 1-22)

As per claim 10, Cranston discloses wherein the determining includes:

- Determining whether the control signals indicate that two or more of the buses are to be selected concurrently, and (col.3, line 52-col.4, line 22), (col.7, lines 7-37)
- Generating a conflict indication signal when the control signals indicate that two or more of the buses are to be selected concurrently. (col.3, line 52-col.4, line 22), (col.7, lines 7-37)

As per claim 11, Cranston discloses wherein the generating one or more alternate control signals includes generating the one or more alternate control signals in response to the conflict indication signal.(col.3, line 52-col.4, line 22), (col.7, lines 7-37)

As per claim 12, Cranston discloses wherein the one or more alternate control signals include a bus switch signal that indicates whether a change in bus selection is to occur and a bus select signal that indicates which of the buses is to be selected. (col.7, lines 7-37), (col.2, lines 18-32)

As per claim 13, Cranston discloses the method further comprising determining whether the control signals indicate that the buses are idle; and (col.7, lines 7-28) Maintaining a previous bus selection when the control signals indicate that the buses are idle. (col.8, lines 1-23)

As per claim 14, Cranston discloses the method further comprising selecting a bus using the control signals when no conflict is determined to exist. (col.7, lines 7-37)

As per claim 15, Cranston discloses wherein the control signals include a present signal that indicates whether a corresponding bus is operating and a master signal that indicates whether a corresponding bus is to be used. (col.7, lines 7-56)

As per claim 16, Cranston discloses wherein the control signals include a master signal that indicates whether a corresponding bus is to be used. (col.7, lines 7-56)

As per claim 28, Cranston discloses a multi-bus system, comprising:

- A plurality of buses; (col.4, lines 40-50)
- A plurality of master devices corresponding to the buses, each of the master devices controlling a corresponding one of the buses, the master devices generating control signals that indicate which of the buses is an active bus; and (col.4, lines 40-67), (col.7, lines 7-56)
- A plurality of the slave devices connected to each of the buses and configured to receive the control signals, determine whether the control signals indicate that two or more of the buses are declared active buses, generate alternate control signals when the control signals indicate that two or more of the buses are declared active buses, and select one of the buses as the active bus using alternate control signals. (col.4, lines 40-67), (col.7, lines 7-56), wherein a priority can be assigned to communication buses implies alternate control signals when a conflict is determined to exist. (col.4, lines 1-22)

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-2, 5-8, 17-18, 20-21, 23, 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jaramillo et al. (US Patent 6,598,104) in view of Wang et al. (Pub No US20040098525)

As per claims 1, 18, Jaramillo discloses a system for selecting bus mastership in a multi-master system, comprising:

- A plurality of master devices configured to generate control signals relating to control of a bus in the multi-master system; and (col. 5, lines 52-62)
- A plurality of slave devices connected to the master devices via the bus, each of the slave devices being configured to; (col.4, lines 33-37), (fig.4)
- Receive the control signals from the master devices, (col.5, lines 52-62)
- Determine whether a conflict exists based on the control signals,(col.5, lines 52-62)
- Generate one or more alternate control signals for selecting bus mastership when a conflict is determined to exist, and (col.5, line 52-col.7, line 18)

Jaramillo discloses all the limitations as above except determine which of the master devices obtains control of the bus. However, Wang discloses the arbitration signals indicate which master processor is given access to the slave device if there is access conflict. The corresponding master processors are informed of the arbitration so that it can proceed with the access if the access is granted, or attempt to access again if the access is denied. [0027]

It would have been obvious to one having ordinary skills in the art at the time the invention was made to incorporate Wang's teaching into Jaramillo's system so as to have a technique to utilize the bus efficiently.

[0006]

As per claim 2, Jaramillo discloses wherein the control signals indicate that two or more of the master devices concurrently assert control of the bus and generate a conflict indication signal when two or more of the master devices concurrently assert control of the bus, and conflict resolution logic configured to generate the one or more alternate control signals in response to the conflict indication signal.(col.5, line 52-col.6, 40)

As per claim 23, Jaramillo discloses a method for selecting bus mastership in a multi-master system comprising a plurality of master devices connected to a plurality of slave devices via at least one bus, the method, performed by each of the slave devices, comprising:

- Determining whether control signals from the master devices indicate that two or more of the master devices concurrently assert bus mastership; (col.6, lines 17-39)
- Generating one or more alternate control signals. (col.6, lines 18-col.7, line 18)

Jaramillo discloses all the limitations as above except determine which of the master devices obtains control of the bus. However, Wang discloses the arbitration signals indicate which master processor is given access to the slave device if there is access conflict. The corresponding master processors are informed of the arbitration so that it can proceed with the access if the access is granted, or attempt to access again if the access is denied. [0027]

It would have been obvious to one having ordinary skills in the art at the time the invention was made to incorporate Wang's teaching into Jaramillo's system so as to have a technique to utilize the bus efficiently. [0006]

As per claim 5, Jaramillo discloses all the limitations as above except wherein each of the slave devices is further configured to determine which of the master devices obtains control of the bus based on the control signals when no conflict is determined to exist. However, Wang discloses the arbitration signals indicate which master processor is given access to the slave device if there is access conflict. The corresponding master processors are informed of the arbitration so

that it can proceed with the access if the access is granted, or attempt to access again if the access is denied. [0027]

It would have been obvious to one having ordinary skills in the art at the time the invention was made to incorporate Wang's teaching into Jaramillo's system so as to have a technique to utilize the bus efficiently. [0006]

As per claims 6,20,25, Jaramillo discloses wherein the control signals include a present signal indicates whether a corresponding one of the master is operating and a master signal that indicates whether a corresponding one of the master devices assert control of the bus. (col.5, line 52-col.6, line 40)

As per claims 7,21, 26, Jaramillo discloses wherein the control signals include a master signal that indicates whether a corresponding one of the master devices asserts control of the bus. (col.5, line 52-col.6, line 40)

As per claims 8,17, Jaramillo discloses a system for selecting a master in a multi-master system, comprising:

- Means for outputting first and second control signals relating to mastership in the multi-master system from each of a plurality of masters in the multi-master system; (col.5, lines 52-62)
- Means for determining whether a conflict for mastership exists based on the first and second control signals; (col.5, line 52-col.6, line 40)
- Means for generating a switch signal and a select signal when a conflict is determined to exist; and (col.5, line 52-col.6, line 40)

Jaramillo discloses all the limitations as above except selecting one of the masters using the switch signal and the select signal. However, Wang discloses the system bus controller arbitrates all the access requests from the to resolve any access conflicts. The system bus controller switches the appropriate connections to connect the master buses to slave buses dynamically according to current system demands and access requests. [0020]

It would have been obvious to one having ordinary skills in the art at the time the invention was made to incorporate Wang's teaching into Jaramillo's system so as to have a technique to utilize the bus efficiently.

[0006]

As per claim 27, Jaramillo discloses a multi-master system, comprising:

A plurality of master devices configured to generate control signals relating to bus mastership;

- Conflict resolution logic configured to receive the control signals from the master devices, determine whether the control signals indicate that two or more of the master devices concurrently assert bus mastership, and generate a switch signal and a select signal when it is determined that two or more of the master devices concurrently assert bus mastership; and
(col.6, line 18-col.7, line 18)
- A plurality of slave devices configured to select bus mastership using the switch signal and the select signal when the control signals indicate that

two or more of the master devices concurrently assert bus mastership.

(col.6, lines 18-67)

5. Claims 3, 19, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jaramillo et al. (US Patent 6,598,104) in view of Wang et al. (Pub No US20040098525) and further in view of Nakamura (US Patent 6,622,191)

Jaramillo discloses all the limitations as above except wherein the one or more alternate control signals include a bus switch signal that indicates whether a change in control of the bus is to occur and a bus select signal that indicates which of the master devices is to be granted control of the bus. However, Nakamura discloses for outputting a second interrupt signal on said other bus based on said control data transferred to said other bus from said one of said first and second buses and holding a state of the second interrupt signal output on said other bus until new control data indicating a state of a next interrupt signal arrives. (col.20, lines 17-30)

It would have been obvious to one having ordinary skills in the art at the time the invention was made to incorporate Nakamura's teaching into Jaramillo's system so as to have an improved computer system which connects two buses by a serial transfer line. (col.1, lines 13-15)

6. Claims 4, 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jaramillo et al. (US Patent 6,598,104) in view of Wang et al. (Pub No US20040098525) and further in view of Melo et al. (US Patent 5,553,248)

Jaramillo discloses all the limitations as above except bus selection logic configured to determine whether the control signals indicate that none of the master devices asserts control of the bus and maintain a previous grant of control of the bus when none of the master devices asserts control of the bus. However, Melo discloses the corresponding signal of new CPU bus master remains asserted low as long as no other CPUs are requesting access to the host bus. The CPU bus master must still maintain control of the host bus while its signal is asserted low. (col.35, lines 8-28)

It would have been obvious to one having ordinary skills in the art at the time the invention was made to incorporate Melo's teaching into Jaramillo's system so as to provide the lowest arbitration latency possible between bus masters and to maximize the computer system throughput. (col.4, lines 55-65)

Response to Amendment

7. Applicant's amendment filed on 11/19/04 have been fully considered but does not place the application in condition for allowance.
 - a. In response to applicant's argument that Cranston does not discloses or suggest generating one or more alternate control signals when a conflict for bus selection is determined to exist. Examiner respectfully disagrees. As Cranston notes at col.4, lines 1-22, discloses in multi-master system, if more than one master device simultaneously attempts to control the line a conflict arises and an arbitration procedure must decide which master device get priority. And furthermore, Cranston notes at col.7, lines 29-67, discloses a priority can be assigned to communication buses. A priority can

Art Unit: 2112

also be utilized to allow a communication bus to preempt communication buses of lower priority. Communication buses may be assigned to classes in which certain classes are allowed simultaneous access and other mutually exclusively.

b. In response to applicant's argument that Jaramillo does not disclose or suggest that a PCI target agent determines whether a conflict exists in control signals received from the PCI initiator agents that relate to control of a bus. Examiner respectfully disagrees. As Jaramillo notes at col.6, line 51-col.7, line 18, discloses target agent also includes the ability to access a second signal (implies alternate control signals) indicating the grant status of the PCI bus. The grant bus is snooped by other initiator agents and PCI target agent. By snooping grant bus, the PCI target agent can determine which PCI initiator agent is trying to access it.

c. In response to applicant's argument that neither Jaramillo nor Wang disclose or suggests a slave device that is configured to determine which of the master devices obtains control of the bus using one or more alternate control signals generated when a conflict is determined to exist, as required by claim 1. Examiner respectfully disagrees. As Jaramillo notes at col.5, lines 52-67, discloses PCI initiator(master) agent accesses a PCI target(slave) agent and attempts a data transmission; arbiter receiving a grant signal from initiator then addressing and informing a PCI target agent of the transferred(implies received requests from master). A target agent issues a retry wherein the PCI target agent is busy and cannot complete the data transaction. Furthermore, at col.6, lines 51-col.7, line 18, PCI target agent includes the ability to access a second signal(implies alternate control signals) indicating the grant status of

the PCI bus. The grant bus is snooped by initiator agents and PCI target agent. By snooping grant bus, the PCI target agent can determine which PCI initiator agent is trying to access it.

d. In response to applicant's argument that Jaramillo does not disclose or suggest bus selection logic that is configured to determine whether the control signals indicate that two or more of the master devices concurrently assert control of the bus and generate a conflict indication signal when two or more of the master devices concurrently assert control of the bus, and conflict resolution logic that is configured to generate the one or more alternate control signals in response to the conflict indication signal. As Jaramillo notes at col.6, line 51-col.7, line 18, discloses target agent also includes the ability to access a second signal (implies alternate control signals) indicating the grant status of the PCI bus. The grant bus is snooped by other initiator agents and PCI target agent. By snooping grant bus, the PCI target agent can determine which PCI initiator agent is trying to access it.

e. In response to applicant's argument that Jaramillo nor Wang disclose or suggest means for outputting first and second control signals relating to mastership in the multi-master system from each of a plurality of masters in the multi-master system. Examiner respectfully disagrees. As Jaramillo notes col.5, lines 52-67, initiator agents accesses a target agent and target agent issues a first signal (control) or denial signal access. These implies outputting control signals.

f. In response to applicant's argument that no motivation for combining Jaramillo and Wang is nonanalogous art, it has been held that a prior art reference must either be

Art Unit: 2112

in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Examiner relies on Wang's reference the teaching of arbitration signals if the access conflict. As Wang notes [0027], it is well established in the art to provide arbitration access for combination. In that [0007] Wang's purpose is to arbitrates access requests, it is clear that Wang is analogous art and therefore properly combinable for the purpose stated in the rejection of record.

Conclusion

8. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. *Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kim Huynh whose telephone number is (571)272-3635 or via e-mail addressed to [kim.huynh3@uspto.gov]. The examiner can normally be reached on M-F 9.00AM- 6:00PM. If attempts to*

Art Unit: 2112

reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Rinehart can be reached at (571)272-3632 or via e-mail addressed to [mark.Rinehart@uspto.gov].

The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9306 for regular communications and After Final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571)272-2100.

Kim Huynh

Feb. 5, 2005



**TIM VO
PRIMARY EXAMINER**